

Some *Zygentoma* (Nicoletiidae, Ateluridae) from the Neotropics, with description of one new *Metrinura* species

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Some *Zygentoma* (Nicoletiidae, Ateluridae) from the Neotropics, with description of one new *Metrinura* species. - Specimens of *Anelpistina* sp. and of *Grassiella* sp. were collected in the Calichal Cave in Honduras and concern the first record of thysanurans s.l. in this country. *Metrinura chibcha* sp.n. is described from Colombia and represents the first Nicoletiidae known to this country and the first one in the genus registered to the Neotropics. New and better preserved specimens of the Dominican amber *Archeatelura sturmi* were also studied.

Key-words: *Zygentoma* - Neotropics - New species - New records - Caves.

INTRODUCTION

The Nicoletiidae and Ateluridae from Neotropics and southern Nearctics remain, with a few exceptions, quite poorly known. None thysanuran s.l. was known to occur in Honduras and (among the *Zygentoma*) only Lepismatidae have been reported to Colombia. From the Dominican Republic, none extant species has ever been studied, though the only known fossil representatives of both these families were described from its amber deposits (MENDES 1997 and STURM & MENDES 1997). Furthermore, the taxonomic position of some neotropical species as "*Nicoletia*" *neotropicalis* and "*Nicoletia*" *armata*, is quite dubious as the types remain untraced and their original and unique descriptions (SILVESTRI 1902) are extremely short and detailless which prevents their definitive recognition.

In the present paper two samples of extant thysanurans are studied, one collected in a cave in Honduras (two genera represented), the other obtained as sublitic in a mountain forest in Colombia; new specimens of the only described amber preserved Ateluridae - *Archeatelura sturmi* Mendes - are noticed from the Dominican Republic, being a few complementary notes added to its original description (MENDES

1997). The species from Colombia is described as new and compared with the remaining taxa considered under *Metrinura* Mendes, 1992.

The specimens are deposited in the American Museum of Natural History, New York, USA (AMNH), in the Centro de Zoologia of the IICT, Lisboa, Portugal (CZ), in the Muséum d'histoire naturelle de Genève, Switzerland (MHNG) and in the Oregon State University, Corvallis, Oregon, USA (OST).

Fam. NICOLETIIDAE

Subfam. CUBACUBANINAE

Anelpistina sp.

Material examined: Honduras - Cueva Calichal, 22.IV.1995, 1 young male, 1 female (CZ) 2 young males, 1 female, 2 young females and 1 juvenile, (MHNG), leg. P. Strinati, with *Grassiella* sp.

As previously registered, none thysanuran s.l. species has been hitherto registered from Honduras, though regarding its known geographical distribution, the presence of *Anelpistina* in the country is not surprising: *A. ruckeri* and *A. weeleri* (both SILVESTRI 1904) are known from the southern USA/Texas; *A. anophthalma* (BILIMEK 1867 and WYGODZINSKY 1946), *A. bolivari*, *A. boneti* and *A. carrizalensis* (all WYGODZINSKY 1946) and *A. miranda* (SILVESTRI 1912) seem endemic from Mexico; and *A. weyrauchi* (WYGODZINSKY 1959) is known from near Lima, Peru only. Like the species from Honduras, *A. anophthalma* and *A. boneti* are exclusively known as troglobionts.

A. ruckeri is known from males only and, so, its comparison with the material from the Calichal Cave remains impossible; the young honduran males have not yet developed neither the cercal spines (impossible to trace) nor the IVth urosternal apophysis (already visible but quite reduced). *A. anophthalma* and *A. carrizalensis* share a quite short ovipositor with less than 10 articles, that scarcely surpasses the level of the IXth stylets. - the ovipositor in the material from Honduras is much longer (about 3 times the stylet length) and composed by 23-25 articles. *A. weyrauchi* presents, otherwise, a longer ovipositor with about 30 articles, as well as one sub-terminal denticle on the ventral surface of the lateral claws, a feature that seems unique in the genus; *A. miranda* is isolated from the remaining species by the shortened tarsus of P III and by the little anterior abdominal stylets - both, with the usual development in the observed material; *A. boneti* shows a much thicker setation along urotergites and urosternites, being the specimens from Honduras typical relatively to this characteristic. *A. weeleri* presents a distinct Xth urotergite shape. At last *A. bolivari*, probably the most similar species, is longer (9 mm, versus 7.6 mm of the bigger adult female) and presents a shorter ovipositor with a lower number of articles (about 20). However, only the description of the adult male will allow to specify the taxonomic status of the Honduran species and enable, almost certainly, the description of a new species.

Subfam. SUBNICOLETIINAE

***Metrinura chibcha* sp.n.**

Figs 1-32

Material examined: Colombia - Ca. 10 Km N of Bogotá: Tibabita, 2 600 - 2 700 m, mountain forest, under stones, 30.XI-13.XII.1967, 1 male holotype, 1 female allotype, 1 young male and 1 female paratypes (CZ), leg. H. Sturm; holotype strongly affected by moulds.

Description:

Body length: 5.0 - 8.0 mm (males) 5.8 - 7.0 mm (females); thorax length: 1.7 - 2.5 mm (males) - 1.9 - 2.0 mm (females); thorax width: 1.2 - 1.5 mm (males) 1.5 - 1.7 mm (females); antennae length (damaged): maximum of 4.7 mm in the paratype female; cerci length (never completely preserved): maximum of 2.5 mm in the allotype. Terminal filament always apically damaged.

Body not specially thin, elongated, parallel-sided, whitish, devoid of pigment and without scales.

Head clearly wider than long, thickly setose, some of the macrochaetae of the supraantennal and posterolateral areas robust and long (Fig. 1); clypeum with a few strong setae, the labrum with a transverse row of similar setae. Antennae of the female and of the immature male with subcylindrical, not transformed pedicellus, the holotype (Fig. 2), with a short, rounded outer apophysis and - not clearly visible due to fungus hyphae - with a glandular area; distal flagellar chains composed by 4 subarticles, much longer than wide and with thin and long setulae, the most distal unities with several thin cylindrical sensilla. Mandibles robust, with well sclerotized incisive area, the molar area present but less clear. Maxilla without special features, the lacinia attaining the same level than the galea, this one with two apical sensorial conules (Fig. 3). Maxillary palp typical (Fig. 4), the apical article almost twice longer than the preceding, in a quite elongated oval, about 4 times longer than wide; setae without special characteristics, some - apical area of the second and third articles - stift and longer than the remaining; in the distal article, besides the typical 6 specialized sensilla (subcylindrical, elongate and with a "brush-like" apex) one oblong (coelonic ?) sensillum quite similar to that reported by WYGODZINSKY (1980: Fig. 1B) to the genus *Nicoletia*. Labium without special features, the labial palp as in Fig. 5, its distal article rounded and as long as wide.

Thorax longer than 1/4 of the body length; nota almost straight along their posterior border, covered by numerous short setae and with strong macrochaetae along the lateral and posterior margins (pronotum - Fig. 6 - also with anterior row of macrochaetae). Legs strong and elongated (Figs 7-13), the tarsus 4-articled, the praetarsus simple and complete (Fig. 13); tibia I, 3-4 times longer than wide, identical to tibia II and shorter than tibia III in the female (Figs 7-9), longer than tibia II and much longer than tibia III in the male (Figs 10 and 11); subdistal dorsal area of male femur III expanded, with 3 thin and stift setae and one very strong and long incurvated macrochaeta (Figs 11 and 12), with a somewhat spatulated preapical area, and which apex is suddenly pointed.

Urotergites I-IX as in Fig. 14, with numerous short setae and with one posterior row of strong macrochaetae, being the longer ones not much shorter than the

tergite itself. Xth urotergite as in Figs 15 and 16, with 2 pairs of strong, spiniform, posterolateral macrochaetae, the outer pair shorter, area between the inner macrochaetae almost straight, narrower in the younger male, always shorter than the length of these seta; ventral surface of the Xth male abdominal tergite devoid of pegs; holotype Xth tergite not well preserved due to the fungus hyphae, though similar.

Urosternite I-VII entire, their posterior border almost straight. Urosternite I (Fig. 17) with a few setae along the middle area only; IInd urosternite entirely setose, with a pair of vesicles (Fig. 18), the III (Fig. 19)-VII with stylets and vesicles - the VIIth (Fig. 20) with pseudovesicles. Coxites VIII (Fig. 21) and IX (Fig. 22) of male also posteriorly straight, the IXth fused; paramera apically subdivided, more transformed in the adult (Figs 23 and 24) than in the immature male (Fig. 22); penis typical. VIIth female urosternite as in Fig. 20, the subgenital plate parabolic, wider than long and setose. Ovipositor (Fig. 25) strong, exceeding the level of the IXth stylets by about their own length, the gonapophysis typical and with 7-8 articles.

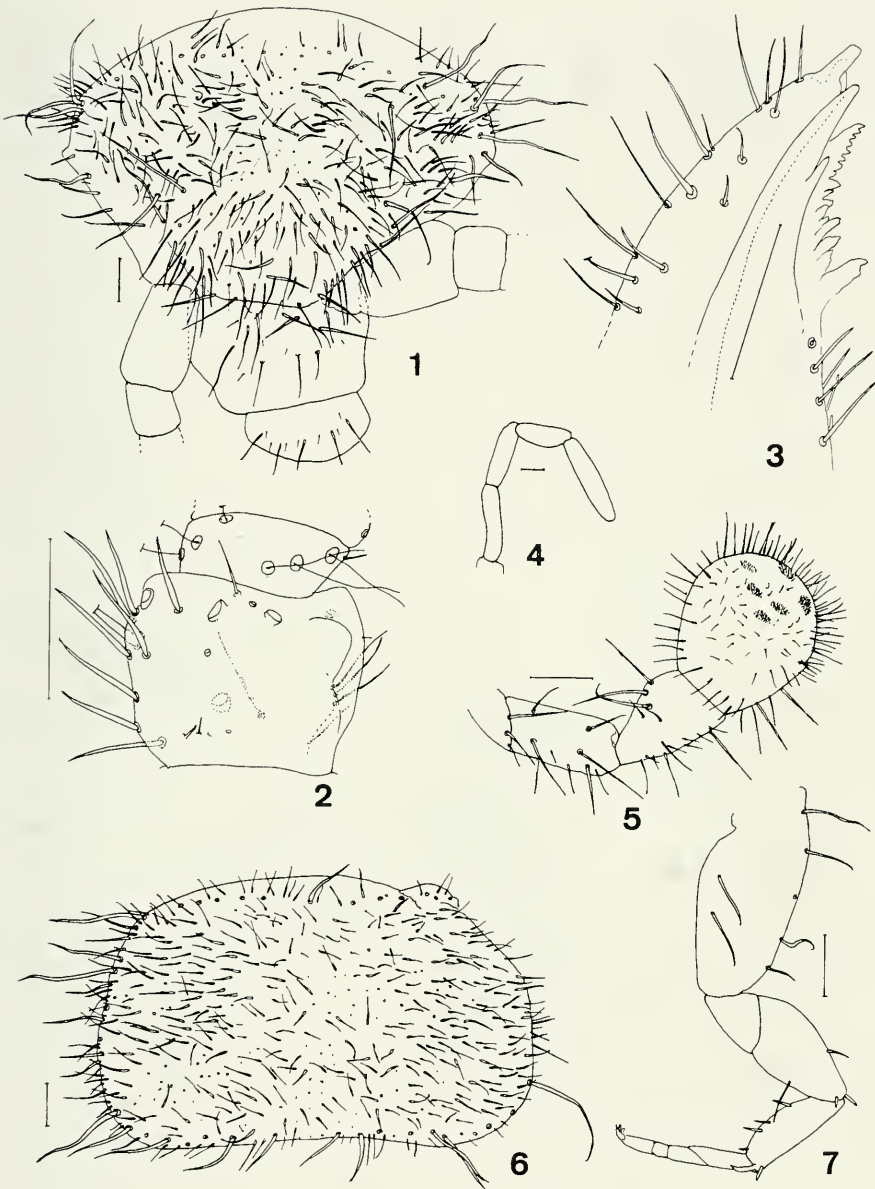
Terminal filaments of the female with some strong and elongated macrochaetae. In the male (Figs 26 and 27), inner margin of cerci and lateral areas of paracercum with abundant, strong and short, sclerotized pegs, at least along the 10 basal articles.

Spermatolophids not detected.

Etymology: The new species is dedicated to the Chibcha people, who inhabited the actual Colombia in pre-Colombian times.

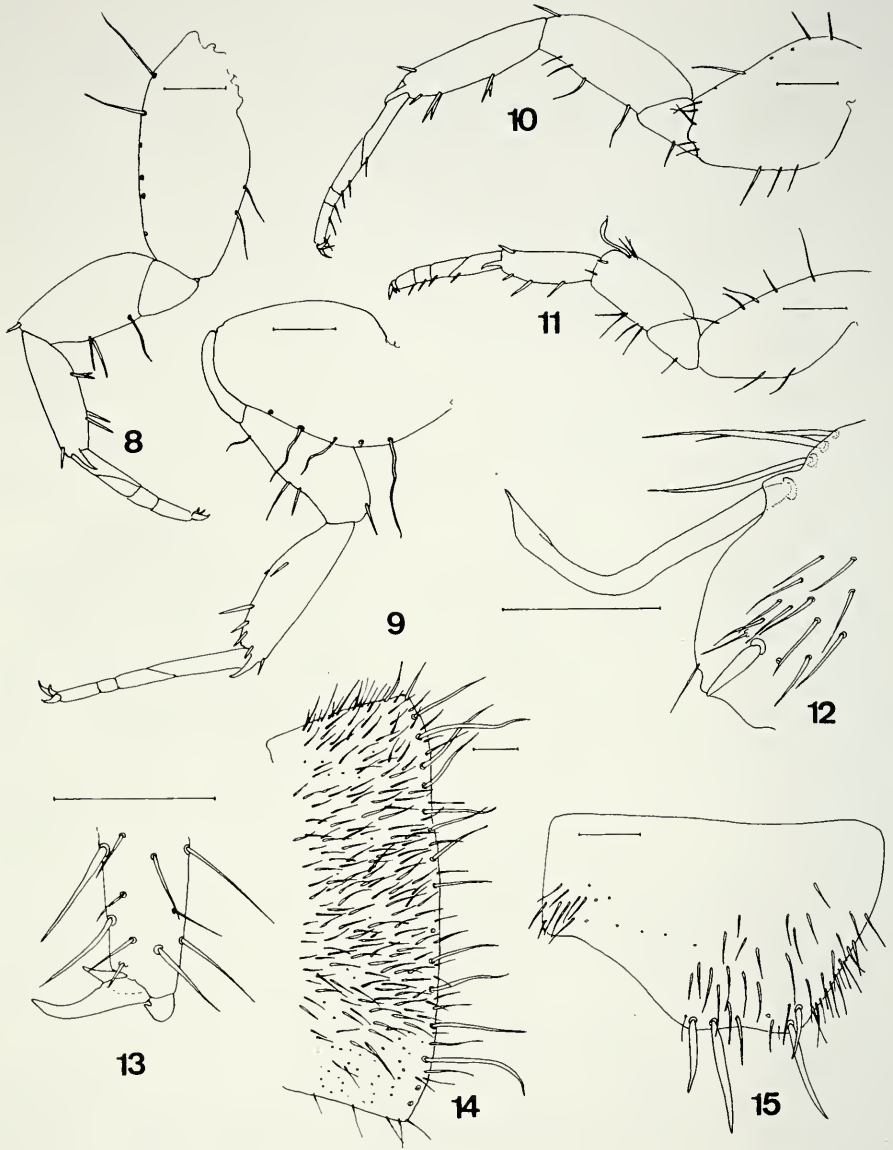
D i s c u s s i o n : *Metrinura chibcha* sp.n. is the only species of the genus known to occur in the Neotropics. *Metrinura* was known by 7 species from the Australian Region only: *Metrinura novaecaledoniae* (Silvestri) from New Caledonia (SILVESTRI 1915), New Hebrides (WOMERSLEY 1937a), Solomon and Marshall islands (PACLT 1982); *M. excelsa* (Silvestri) from South Australia (SILVESTRI 1920, and WOMERSLEY 1936 and 1937b); *M. gracilis* (Carpenter) from Samoa (CARPENTER 1928) and New Britain (PACLT 1982); *M. pacifica* (Carpenter) from Samoa, New Hebrides and Bismark (CARPENTER 1928), collected again in the Bismark islands (PACLT 1971), in New Britain (PACLT 1974) and in New Ireland (PACLT 1982); *M. russendenensis* (Smith & Shipp) from Queensland, Australia (SMITH & SHIPP 1977); *M. anemona* (Smith) from New South Wales, Australia (SMITH 1988); and *M. norfolkensis* (Smith) from the Norfolk island, off Australia (SMITH op. cit.) - Smith's review of the Australasian Nicoletiids is under press.

M. gracilis and *M. pacifica*, known in female sex only - PACLT (1982) notices the occurrence of males of both species but does not describe this sex - present, opposite to all the remaining species in the genus, 8 pairs of abdominal stylets (segments II-IX), among other differences. *M. excelsa*, *M. anemona* and *M. norfolkensis* have 5 pairs only of abdominal vesicular structures (III-VI with vesicles, VII with pseudovesicles); in addition, the first one have a very unique male pedicellar apophysis and the two last species share flower-shaped structures (more complex in *M. anemona*) along the male cerci instead of spines or pegs, as well as distinct pedicellar apophysis; *M. anemona*, like the poorly described *M. russendenensis*, exhibits very short paramera scarcely surpassing the level of the IXth stylets insertion. *M. novaecaledoniae* is probably the closest species relatively to *M. chibcha* sp.n. on



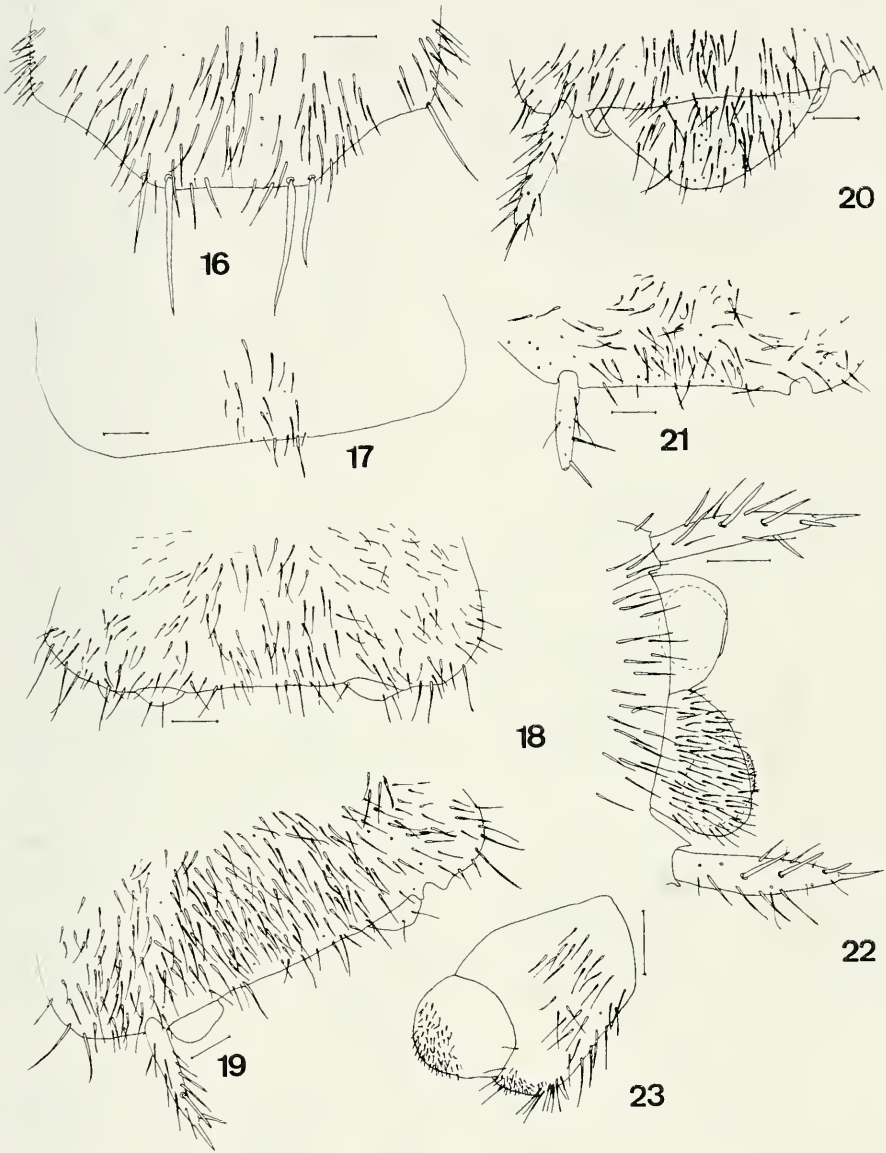
FIGS 1-7

Metrinura chibcha sp.n. Fig. 1 - Head; Fig. 2 - Pedicellus of adult male antenna; Fig. 3 - Apex of maxilla, Fig. 4 - Maxillary palp; Fig. 5 - Labial palp; Fig. 6 - Pronotum (right side bended); Fig. 7 - PI of female. Scales: 0.1 mm.



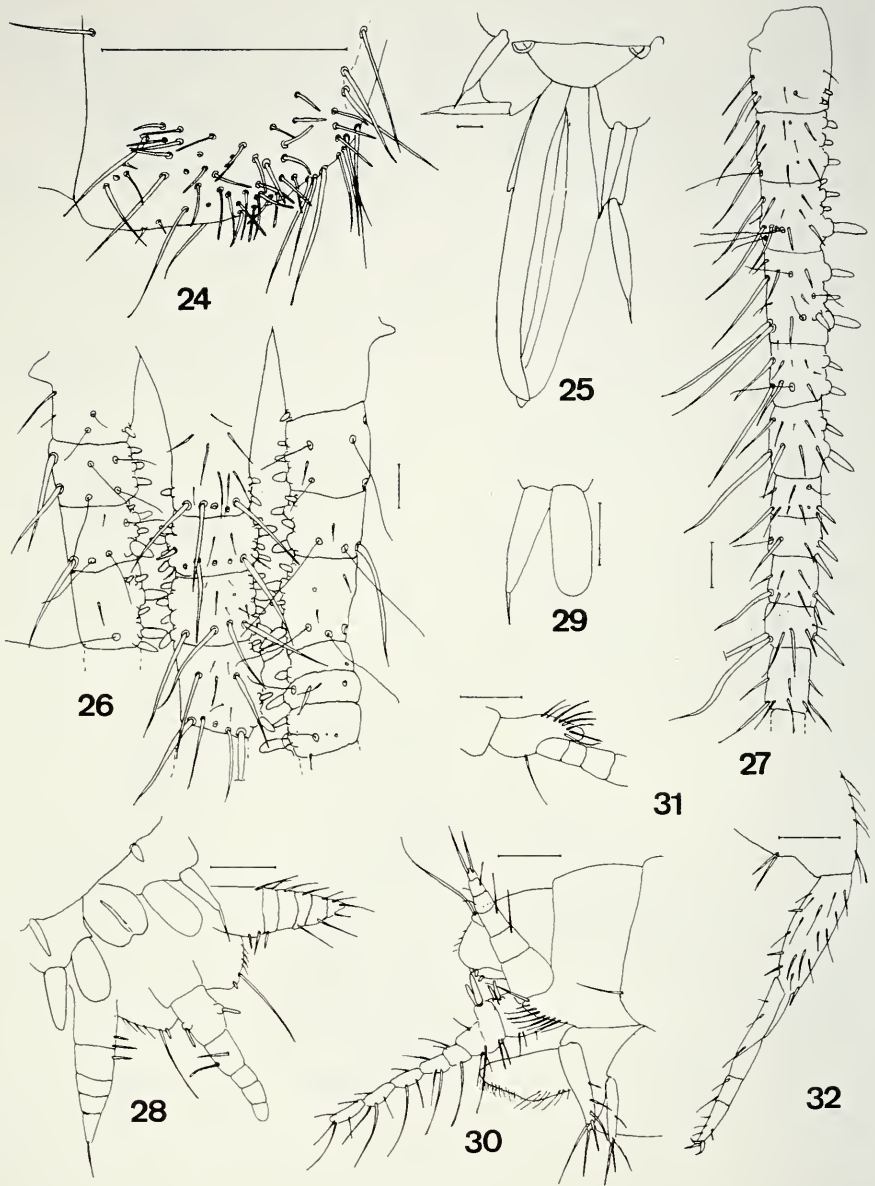
FIGS 8-15

Metrinura chibcha sp.n. Fig. 8 - P II of female; Fig. 9 - P III of female; Fig. 10 - P I of male; Fig. 11 - P III of male; Fig. 12 - Ibid., detail of the dorsoapical chaetotaxy of the femur; Fig. 13 - Ibid., detail of the praetarsus; Fig. 14 - IInd urotergite; Fig. 15 - Xth urotergite of the younger male. Scales: 0.1 mm.



FIGS 16-23

Metrinura chibcha sp.n. Fig. 16 - Xth urotergite of the female; Fig. 17 - Ist urosternite; Fig. 18 - IInd urosternite; Fig. 19 - IIIrd urosternite; Fig. 20 - VIIIth female urosternite and subgenital plate; Fig. 21 - VIIIth male coxite; Fig. 22 - IXth coxite and paramera of the younger male; Fig. 23 - Adult male paramerum. Scales: 0.1 mm.



FIGS 24-32

Metrinura chibcha sp.n. Fig. 24 - Adult male paramerum, detail of the outer distal region of the proximal area; Fig. 25 - Posterior ventral view of the female abdomen; Fig. 26 - Preserved part of the cerci and paracercum of the holotype; Fig. 27 - Right cercus, ventral view, of the younger male. *Archeatelura sturmi* Mendes. Fig. 28 - Ventral view of the posterior abdomen (n. DR-14-275); Fig. 29 - Outline of the right IXth stylet and paramerum (n. T-1-5); Fig. 30 - Lateral view of the abdomen (n. DR-14-1121); Fig. 31 - Ventral view of left antennal pedicellus (n. DR-14-1121); Fig. 32 - PI (n. DR-14-1121). Scales: 0.1 mm.

account of the number of abdominal vesicles and stylets besides several other characteristics; it presents, however 1) a much bigger subgenital plate, 2) a conspicuous (though not deep) Xth urotergite median depression and, in the male sex, 3) a distinct Xth tergum, 4) much longer paramera which distal portion is proportionally shorter and 5) a quite different chaetotaxy along the terminal filaments. Relatively to this last species, it must be registered also that the ovipositor, reported by SILVESTRI (1915, p. 11) as "... crassiusculus, ... apicem stilorum IX spatio brevi (mm 0,70) superans..." seems to be longer in this melanesian taxon though the IXth coxites and stylets were not represented (SILVESTRI op. cit., Fig. VIII.4) despite their citation in the correspondent legend ("... 4. Feminae urosterna 7-9 cum ovipositore..."); as a matter of fact the represented sternites are the VI-VIII, what unables a definitive comparison relatively to this characteristic.

Under the zoogeographical point of view, the presence of *Metrinura* in Colombia sounds quite peculiar, since the previously described species of the genus are restricted to Australia and Melanesia. However, it must be emphasized that the Subnicoletiinae (MENDES 1988 and 1992) are already known from the New World by one recent endemic genus (*Trichatelura*) and by oligocenic (amber preserved) species of the actually Austro-malaysian genus *Trinemurodes* (STURM & MENDES 1997) - the presence of a non-introduced *Hematelura* species in Central and South America remains dubious. Otherwise, the previously reported "*Nicoletia*" *neotropicalis* and "*N.*" *armata* shall belong also to this subfamily and not to the Nicoletiinae, that is, one of these species or both may, as a matter of fact, belong to *Metrinura*, to *Trinemura*, to *Trinemurodes* or to any undescribed genus of this same group. A trans-antarctic passage could, so, be suggested for some representatives of the Subnicoletiinae, a subfamily represented also in Western tropical Africa (genera *Hematelura*, *Trichotriura*, *Trichotriuroides* and *Subnicoletia*). In spite of the huge area - partially corresponding to accidentally introduced populations as repeatedly registered by several authors - from where *Nicoletia phytophila* (the only unquestionable representative of the Nicoletiinae) is signalized, some of the recorded data may correspond also to misidentifications of representatives of the Subnicoletiinae - v.g. Indonesia: Flores and Sumatra islands (OUDEMANS 1890) and/or Marquesan and Society islands (SILVESTRI 1935) - namely of species belonging to genera like *Trinemura* or *Metrinura*.

Fam. ATELURIDAE

Grassiella sp.

Material examined: Honduras - Cueva Calichal, 22.IV.1995, 2 adult females (MHNG), leg. P. Srinati, with *Anelpistina* sp.

One female has 4.7 mm body length (the other one is in poor conditions); the lack of adult males unables a specific determination.

This amphi-atlantic genus, with 10 species distributed along southern USA (Texas and Louisiana) Mexico, Central and South America, has not been reported from Honduras. However, *G. praestans* Silvestri (see SILVESTRI 1912 and

WYGODZINSKY 1958) is distributed from Mexico and Costa Rica to Peru and Argentina and several other species are known to occur in the area.

Archeatelura sturmi Mendes, 1997

Material examined: Dominican Republic - in amber: 1 male n° 10; 1 young male n° DR-14-275; 2 males n° DR-14-1121 with ants; 1 female, n° DR-10-1562; 1 female n° DR-10-1585; 1 young female n° DR-14-1130 with ants: all (AMNH), leg. D. Grimaldi; 1 male n° T-1-5 (OSU), leg. Poinar Jr.

These specimens of *A. sturmi* agree fairly with the original description (MENDES 1997) in what the major characteristics are concerned. The minute setae present along the posterior border of the nota and the even thinner setulae of the hind margin of the urotergites, are quite difficult to see in the majority of the specimens, due to their extremely reduced dimensions as well as to the abundance of scales, sometimes overlapping the setae. The paramera, not well observable on the type-specimens due to the position of the insects inside the amber, are elongated (Figs 28-30), subcylindrical, with a somewhat depressed extremity and (visible only in some cases) with very thin elongated outer setae and numerous minute apical setulae; they are as long as the IXth stylets (without the apical spine) and 2 (in the younger males) to 3 times (adult specimens) longer than wide. The posterior margin of the VIIIth coxite is straight. The Xth male urotergite presents very few apical ventral conules (1-3 only) and, as it was originally reported, these ones are inserted on 1+1 ventral distal globous expansions. The development of the paracercal pegs is also variable with the age of the specimen, being the humped areas where the second pair (the bigger one) is inserted, clearly more conspicuous in the adult males (Figs 28 and 30). Fig. 31 represents the distal dorsal apophysis of the adult male pedicellus, a character not distinctly visible in the original material. Opposite to what was previously described there are thin and short spines in the tibiae - 1 distal dorsal and 3 ventral (Fig. 32).

The presence of ants in the same amber samples (n° DR-14-1121 and DR-14-1130) suggests that in oligocenic times some kind of close interrelationship occurred already between these two groups; cases of almost certain myrmeco- and termitophily have been noticed, indeed, to this period, though relatively to other groups of insects (POINAR 1993).

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